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### **Submission to the Inquiry into Australia's Waste Management and Recycling Industries**

Committee Secretary  
Standing Committee on Industry, Innovation, Science and Resources  
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Dear Committee Secretary,

Thank you for the opportunity to comment on Australia's management and recycling of waste and plastics. I wish to focus on the opportunities presented by waste plastics and in particular innovative recycling approaches.

The huge amount of plastics waste that is not recycled is clearly an opportunity to develop new products and expand businesses, and perhaps also enhance regional employment and development.

My key suggestion is a Business Case Study into the sort of products that can be commercially manufactured from Australia's stockpile and stream of waste plastics. My suggested title is The Markets for Recycled Plastics Products and the Potential for New Products - A Business Case Study.

This should be a comprehensive and technical analysis of the waste stream and its various parts, and all aspects of product and business development including waste collection and transport, product engineering, safety, markets, and financing. A missing ingredient in the development of plastics recycling has been the lack of suitable commercial products that can utilize the huge volumes of waste. So the Business Case Study should focus on products that have wide usage and the potential for large scale utilization of waste plastics.

In this regard, I would like to suggest the following products that could fill this need and are suitable for analysis by the Business Case Study.

#### *Suburban Power Poles*

Power poles are in every suburban street. They are typically made from the boles of tall trees and there

are also steel poles. Replacing even a small percentage of these with poles made from or containing high density recycled plastics would easily consume all of Australia's suitable waste plastics.

The Business Case Study could examine the suitability of developing power poles from recycled plastics and whether plastic poles could be made to meet the applications and specifications of power utilities, state governments, local government councils, and private property owners. Even a niche opportunity could provide a total or significant solution to the volume of waste.

If viable, such poles would have the additional environmental benefit of reducing demand for native timbers, and would have the additional financial benefit of freeing these native timbers for higher value use. They could present a serious manufacturing and employment opportunity for a suitable regional city, including where a timber industry is experiencing reduced employment.

It is worth noting that fibre plastic poles made from fibreglass and polymer resin are being trialed. However, these have limitations as they can be easily damaged and are not suitable for bushfire prone areas.

A solid power pole made of, or significantly made of, recycled plastic would be much more sturdy and its use in suburban areas would avoid bushfire concerns. Any issues in using recycled plastics, together with suitable product design and chemical composition, could be addressed in the Business Case Study.

#### *Lamp Posts*

Lamp posts are typically made from timber or steel. They can be more individual in design than power poles. In public places they often have a secondary aesthetic or decorative role, and they can also be used in conjunction with underground power cables. A large market is state and local governments, which would simplify the adoption of a range of lamp posts made from or containing a significant quantity of recycled plastic.

#### *Road Sign Posts*

An easy and potentially very large recycling opportunity is plastic poles for signs on roads, parks and other public spaces. Road sign posts are in all suburban streets and are currently made of steel. They have a simple and uniform design, and would be less technically demanding in design than power poles and lamp posts. Recycled plastic poles would be easy to manufacture in bulk, and as their markets are governments they could be easily ordered in bulk and would have a guaranteed market. Their uptake would be in new streets and through the gradual replacement of damaged steel posts.

#### *Footpaths and Walkways*

Public footpaths and walkways are ubiquitous. They are large consumers of concrete and some walkways are also made of timber. There are likely to be numerous situations where footpath slabs and walkway sections made with recycled plastics or a high proportion of recycled plastic are suitable. The technical specifications and the large scale manufacture of these alternatives are relatively simple.

As well as new footpaths and walkways, concrete pathways need periodic replacement due to cracking. This presents an opportunity for steady uptake of a suitable recycled plastics replacement.

#### *Kerbs, Kerbing and Guttering*

Road kerbs and kerbing and guttering are also ubiquitous in suburbia and are large consumers of

concrete. The Business Case Study could look at whether there are niche opportunities for kerbs and kerbing and guttering made from suitable recycled plastics. For example, there may be niches at certain sections of a road, at certain types of roads, in low use areas, and in low-load or non-load bearing areas. Particularly suitable would be applications where pre-made product that meets the specifications can be easily fitted or cut to size, and where it can obviate the need for labour intensive formwork.

#### *Bricks, Blocks, Pavers, Fence Posts, Palings and Other Products*

There are many building applications that lend themselves to the use of bricks, blocks, pavers, posts, palings, bollards and other products made from recycled plastics and composite products that include plastics. These can include recycled soft plastics for which it is harder to find applications. Among others, there are uses for these alternative products in gardens, parks, landscaping and agriculture.

One specific example with a large scale market is the front fences of homes. At present these are usually constructed from timber palings or bricks. Front fences are very suitable for a range of alternative products made from waste plastics, and significant uptake would create a large variety of manufacturing opportunities.

Retailers and wholesalers already offer some bricks, blocks, pavers, fence posts, palings, bollards, garden edging, park benches and many other simple products made from recycled plastics. But the industry is at an early stage of development and the Business Case Study could look at how to encourage its growth. This should include improving the quality of the products, increasing the product range, improving their cost competitiveness, improving their availability, and improving their marketing.

#### *Concrete Slabs*

Another idea that could be examined is whether there is a potential for a high density waste plastics alternative to concrete slabs for residential driveways and garden sheds. These would need to be suitably rated for stability, load bearing, fire safety, and durability.

One approach is to extend the current research. There is currently some research into recycled plastic additives in concrete footpaths, and there has been some limited research into recycled plastic additives in concrete slabs. Another approach is to look at the feasibility of developing a range of pre-fabricated standard sized slabs that are made significantly from waste plastics and that can be cut and drilled as required for dimensions and access for services, transported to the site, and if required assembled onsite.

#### *Alternatives to Cement, Concrete, Brick, Steel and Wood Products*

There are potentially large markets for recycled plastics in current markets for many other cement, concrete, brick, steel and wood products.

Research will continue to expand the list of products. For example, recycled plastics have been developed for use as alternatives to steel reinforcing in some concrete products. Still under investigation is the development of green concrete that contains recycled plastic. As these are at an early stage of development, the Business Case Study could look at ways to help grow this sector.

Also worth noting are the greenhouse gas abatement benefits of using pre-made products from waste plastics to replace cement, concrete, brick and steel products in large scale applications. Cement,

concrete and brick production are very greenhouse gas intensive, and the environmental benefits of specific recycled plastic alternatives could also be examined by the Study.

### *Business Case Study*

The Business Case Study would be a guide to both Government and business on the way forward and which products to develop. It would only need one or a small number of viable products to emerge, whether from the ideas above or ideas from other sources, and Australia will have large scale commercial and profitable uses for its waste plastics.

As part of its financing examination, the Business Case Study could also look at whether a new government enterprise would be an efficient way to develop and commercialize suitable products where these products do not compete with existing manufacturers. A government enterprise would overcome key issues such as product development and start-up financing. An alternative or additional role for such an enterprise could be the collection of re-usable waste plastics, their processing into feedstocks, and the sale of the feedstocks to manufacturers. This could offer significant collection, processing and bulk supply efficiencies and cost advantages. Once successful, the enterprise could be privatized to benefit the Federal Budget.

The Business Case Study should also look at the role of government procurement. Significant and perhaps complete uptake of recycled plastics could be achieved if state and local governments favoured the purchase of suitable recycled plastic products. Among these, state governments and utilities may be able to utilize sign posts and power poles, and local governments utilize footpaths, walkways, bollards, park fences, park benches and other products. The Study could examine how targeted government procurement for specific products would work in practice if widely adopted across Australia and provide a better understanding of the environmental and economic costs and benefits.

An essential part of the way forward is encouraging plastics recyclers to develop their product range, develop new products, and to improve the competitiveness, the availability, and the marketing of their products. In this regard it will be interesting to see what projects are successful under the recent Round 8 of the Government's Cooperative Research Centres Projects grants that included recycling waste plastics. However, given the large volumes and variety of Australia's waste plastics, there may be a role for further and perhaps more targeted funding to fill the gaps.

Yours faithfully

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